



SEP 16 1992

15 September 1992

Mr. Kenneth Driscoll
P.O. Box 19
Fairlee, VT 05045

RE: Report on the Investigation of Subsurface Petroleum Contamination at the Estelle Blake Estate, Ely, VT (State DEC Site # 92-1224)

Dear Mr. Driscoll:

I have enclosed a copy of our report on the above-referenced project. As we discussed on the phone today, I have forwarded a copy of the report to the State of Vermont DEC.

Please call me if you have any questions or comments on this report.

Sincerely,

Ron Miller
Geologist

Enclosure
c. Ms. Parminder Grewal, State of Vermont DEC

SEP 16 1992

**REPORT
ON THE INVESTIGATION OF
SUBSURFACE PETROLEUM CONTAMINATION**

at

**THE ESTELLE BLAKE ESTATE
ROUTE 5
ELY, VERMONT
(Site #92-1224)**

September 1992

Prepared for:

**Mr. Kenneth Driscoll
P.O. Box 19
Fairlee, VT 05045**

Prepared by:

***Griffin International, Inc.*
2B Dorset Lane
Williston, Vermont 05495
(802) 879-7708**

Griffin Project #: 7924246

1.0 SUMMARY

The Estelle Blake estate is located along the west side of U.S. Route 5 in the village of Ely, Vermont. In May 1992, subsurface petroleum contamination was discovered during removal of petroleum underground storage tanks from the property.

Griffin International, Inc. (Griffin) investigated the source, degree, and extent of contamination at the site for Mr. Kenneth Driscoll, the current site owner. The investigation consisted of the following:

- Installation of four soil boring/monitoring wells;
- Field screening of soils from the borings for volatile organic compounds (VOCs);
- Laboratory analyses (by EPA Method 8020) of water samples collected from the wells; and
- Assessment of the risk posed to local buildings, surface water bodies, and drinking water supplies.

On the basis of this investigation, Griffin has confirmed that a release or releases of gasoline has occurred at the Estelle Blake estate. It is likely that the observed leaks in the removed gasoline tanks and possibly the associated piping was responsible. The amount and duration of the release(s) are unknown. The contaminant distribution suggests that the contamination has existed for several years.

The release or releases have resulted in the contamination of soils in the vicinity of the former UST locations, and of groundwater in the surficial aquifer beneath, and downgradient of, the former USTs. Materials comprising the surficial aquifer in the vicinity of the site are predominantly medium - fine and coarse - fine sands. Groundwater in the surficial aquifer is present at approximately 22 - 25 feet below the surface, and flows southeast toward the Connecticut River.

No drinking water supplies, surface water bodies, or buildings are known to be impacted from this contamination. The apparent long-term nature of the contamination at the site, coupled with the absence of impacted sensitive receptors, suggests that the site does not pose a significant threat to the public health and safety. Because dissolved contaminant levels in several surficial monitoring wells are significantly above drinking water standards, however, we recommend that the currently installed monitoring wells be resampled in October 1992, and that the one identified downgradient bedrock supply well be sampled. Because elevated PID readings were obtained in some shallow soil samples, we also recommend that the on-site building and the Conval Antique Mall basements be screened with a photoionization detector (PID) during the October water sampling. The results of the water sampling and PID screening will then be used to determine whether active remediation is necessary.

2.0 INTRODUCTION

This report describes the investigation of subsurface petroleum contamination at the Estelle Blake estate in Ely, Vermont. The investigation has been conducted by Griffin International, Inc. (Griffin) for Mr. Kenneth Driscoll, who recently purchased the property, in response to a Vermont Department of Environmental Conservation (VTDEC) letter to Mr. Driscoll dated 5 June 1992. The VTDEC requested a subsurface investigation after petroleum contamination was detected during the removal of gasoline underground storage tanks (USTs) from the property.

3.0 SITE BACKGROUND

3.1 Site Description

The Estelle Blake estate is located along the west side of U.S. Route 5, approximately 1000 feet south of the intersection with Vermont Route 244 in the Village of Ely, Vermont (see Figure 1, Site Location Map). The site includes a large wood-frame building located near the road and a large pasture behind the building. The on-site building consists of an abandoned store in the southern section and an unoccupied residential area in the northern section. The site map (Figure 2) shows the location of pertinent site features.

The area surrounding the site exhibits a mixture of residential and commercial uses. Buildings in the area are widely spaced. The Conval Antique Mall is located approximately 300 feet east of the site, on property owned by Britton Lumber, which in turn is located east of Conval. The Ely Post Office is located on the east side of Route 5 approximately 200 feet southeast of the property. A residence owned by Mr. Howard Atherton is located on the west side of Route 5 approximately 300 feet south. A dairy farm, owned by Mr. Don Gulick, occupies property immediately north-northeast of the site, with buildings located approximately 500 feet from the site. Interstate Route 91 is located to the west of the site.

The site is located in the Connecticut River valley at an elevation of about 415 feet NGVD (National Geodetic Vertical Datum), on a terrace above the river. Topography at the site is generally flat. The Connecticut River flows toward the south approximately 1200 feet east of the site.

The Surficial Geologic Map of Vermont indicates that surficial materials at the site consist of pebbly sand deposited along the shore of a glacial high-level lake that once flooded the Connecticut Valley. Subsurface explorations at the site have encountered principally medium-fine and coarse-fine sands, with lenses of silt and silty sand. Bedrock underlying the site is mapped as metamorphic phyllite of the Orfordville Formation. Bedrock was not encountered during subsurface explorations at the site.

3.2 Site History

On 1 May 1992, Griffin inspected the removal of one 1000-gallon and one 2000-gallon gasoline USTs from the property. According to a long-time local resident, the property was used as a gasoline station beginning in the 1920s through the late 1970s or early 1980s. Details of the UST removals appear in Griffin's tank removal report submitted to the VTDEC Management and Prevention Section on 15 May 1992. The two USTs were unregistered, probably greater than twenty years old, and had been disused for about ten years. Several holes were observed along a weld seam in the 1000-gallon tank. A hole was also observed in the 2000-gallon tank by an employee of Lee's Oil Service, which had been hired by the removal contractor to pump waste fluids from the tanks. Photoionization detector (PID) readings collected with an HNU Model PI-101 PID during the tank removals ranged from 10 - 20 parts per million (ppm) near the north end of the tank pit to as high as 400 ppm near the south end of the tank pit. The removed USTs were not replaced.

On the basis of the reported presence of soil contamination at the site, the VTDEC requested that additional investigation be conducted at the site to determine the degree and extent of soil and groundwater contamination, and to assess the risk posed by the contamination to nearby sensitive receptors.

4.0 INVESTIGATIVE PROCEDURES

4.1 Monitoring Well Installation

To determine the degree and extent of soil and groundwater contamination at the site, four monitoring wells were completed by Tri-State Drilling and Boring of East Burke, Vermont, under the direct supervision of a Griffin hydrogeologist. This work was completed on 29 July 1992.

Well locations were constrained by the proximity of the removed tanks to several site features, including the on-site building in the presumed upgradient direction, and U.S. Route 5, overhead utilities, and railroad tracks in the downgradient direction. MW1 was located adjacent to the on-site building approximately 30 feet southwest of the former tank locations, in order to place it as far upgradient as possible without drilling in the rear of the building. MW2 was located in the former tank pit, to evaluate the vertical degree and extent of contamination at the presumed source. MW3 was located approximately 40 feet north of the former tank locations, to evaluate the lateral degree and extent of contamination in the presumed cross-gradient direction from the former tanks. MW4 was located on the east side of U.S. Route 5, approximately 100 feet east of the former tank locations, to evaluate the lateral degree and extent of contamination in the presumed downgradient direction.

The wells were installed using a hollow-stem auger drill rig. Undisturbed soil cores were collected in a split spoon sampler at five foot intervals from each borehole. Split spoon samples and drill cuttings collected directly from the augers were logged by the hydrogeologist and screened for volatile organic compounds (VOCs) using a Photovac MicroTIP HL 2000 photo-ionization detector (PID). Soils encountered in the boreholes generally consisted of medium-fine sand and coarse-fine sand, with lenses of silt and silty sand. PID readings and soil characteristics are listed on the detailed well logs in Appendix B.

In MW1, samples collected from depths of two feet to 12 feet had no petroleum odor and only slightly elevated PID readings (1.7 - 8 ppm); however, the three samples from deeper depths in this well, including two saturated samples, had noticeable petroleum odor and PID readings of 1842 - 2185 ppm. All of the soil samples collected from MW2, including one saturated sample, had petroleum odors and elevated PID readings that ranged from 263 ppm to over 2500 ppm. One soil sample from MW3, collected from a depth of approximately two feet, had a slightly elevated PID reading (1.1 ppm) but no discernible odor; all other samples from this well had no detectable PID readings. Unsaturated soil samples from MW4 had only slightly elevated PID readings (all less than 1 ppm) and no petroleum odor; the saturated sample collected from a depth of 25-27 feet, however, had a PID reading of 18.4 ppm and a slight odor.

The monitoring wells are constructed of two-inch diameter PVC well screen and casing. In each well, the screened interval extends approximately five feet above and below the apparent water table. The annulus between the borehole wall and the screened section of each well contains a silica gravel pack to filter fine sediments from groundwater entering the well. The annulus of each well also contains a bentonite seal to prevent surface water from infiltrating into the

borehole. Each well is protected at the surface by locking well caps, flush mounted steel well head protection casings, and bolt-down covers. Well construction details are listed on the well logs in Appendix B.

After installation, monitoring wells MW1, MW2, and MW3 were developed by Tri-State Drilling and Boring using an air-lift pump. MW4 was developed by the Griffin hydrogeologist with a clear Teflon bailer.

4.2 Determination of Groundwater Gradient and Flow Direction

On 4 August 1992, Griffin measured depth to water in each of the installed monitoring wells. Relative water table elevations were subsequently calculated by subtracting measured depth-to-water from surveyed top-of-casing elevations. Top-of-casing in MW1 was arbitrarily assigned an elevation of 100 feet. Water level data is presented in Appendix C.

The water table surface was estimated using the water level elevations in the monitoring wells. Groundwater in the area was found to be flowing east-southeast, toward the Connecticut River, at a gradient of 5.6% (see Figure 3, Groundwater Contour Map).

4.3 Groundwater Sampling and Analyses

Water samples were collected from all four monitoring wells on 4 August 1992. Samples from these wells were analyzed to EPA Method 8020. One or more of the gasoline constituents benzene, toluene, ethylbenzene, and xylene (collectively known as BTEX) was detected in each of the installed monitoring wells. Significant BTEX contamination was present in monitoring wells MW1, MW2, and MW4. Methyl tertiary butyl ether (MTBE), an anti-knock gasoline additive used since approximately 1980, was not detected in any of the monitoring wells. Groundwater quality data from all monitoring wells is presented in Table 1. Distribution of total BTEX levels is shown in Figure 4, BTEX Distribution Map. Laboratory reports appear in Appendix D. Equipment blank, trip blank and duplicate samples were collected and indicate that good quality assurance and control was maintained during sampling and analysis.

TABLE 1. Groundwater Quality Summary

PARAMETER	MW-1	MW-2	MW-3	MW-4	Vermont Drinking Water Standard
Benzene	ND	32.9	ND	ND	5*
Chlorobenzene	ND	ND	ND	ND	100**
1,2-DCB	ND	ND	ND	ND	-
1,3-DCB	ND	ND	ND	ND	-
1,4-DCB	ND	ND	ND	ND	-
Ethylbenzene	477.	60.3	ND	744.	680**
Toluene	467.	175.	1.4	242.	2420**
Xylenes	4,020.	386.	ND	7,380.	400**
Total BTEX	4,964.	654.	1.4	8,366.	-
MTBE	ND	ND	ND	ND	40**

All Values Reported in ug/L (parts per billion, or ppb)

* - Maximum Contaminant Level

** - Vermont Health Advisory Level

Benzene was detected in MW2 above the MCL, but was not detected in the other monitoring wells. Ethylbenzene was slightly above the Vermont Health Advisory level in MW4, and below the standard in MW1 and MW2. Toluene was detected in all of the monitoring wells at levels below the Vermont Health Advisory level; only a trace level was detected in MW3. Xylenes were detected at levels significantly above the Vermont Health Advisory level in MW2 and MW4, and slightly below the standard in MW1.

5.0 RISK ASSESSMENT

Most of the buildings in the area, including the Gulick farm, Conval Antique Mall, Britton Lumber, the Ely Post Office, and the Atherton residence, are served by a private water supply system that obtains water from a spring located along the base of a hill approximately 1500 feet northwest of, and upgradient from, the site. Bedrock outcrops are frequent along the hill. The location of the spring thus suggests that its water is obtained from water flowing downward and eastward through fractures in the overlying bedrock. It is thus extremely unlikely that this water supply would be impacted by the contamination observed at the site.

The site is served by a recently installed 700-foot deep bedrock supply well located approximately 700 feet west of the on-site building. The location of this well indicates that there is little likelihood that the well would be impacted by the observed contamination at the site.

One other residence in the area, located on the east side of Route 5 approximately 500 feet south of the site and owned by Ms. Mary Daley, is reportedly served by a bedrock well of unknown depth. In a telephone interview on 7 September 1992, Ms. Daley reported that she had not observed any indications of contamination in her well. The distance of this well from the site indicates that it is unlikely that it will be impacted by the observed contamination at the site.

The on-site building has an enclosed basement beneath the residential part of the building, and a partly enclosed basement beneath the former store. Both basements have flagstone walls. The residential area basement extends approximately six feet below grade, and the store basement extends approximately three feet below grade. Both basements were screened with a MicroTIP PID on 29 July 1992. No petroleum odors or elevated PID readings were obtained in either area. Although high PID readings were measured in nearby shallow soils in the tank pit area (MW2), these soils were disturbed during the tank removal. PID readings obtained from MW1 are more likely representative of undisturbed soils near the former tank area. In MW1, little evidence of hydrocarbon contamination was noted in soils up to twelve feet deep. It is thus unlikely that vapors from adsorbed soil contamination surrounding the former UST locations will migrate into the basement of the on-site building. On the other hand, it is possible that negative pressures generated by the building furnace will induce vapor migration into the building during the heating season.

The Conval Antique Mall building, located approximately 200 feet east-southeast of the former UST locations, reportedly has a basement beneath the main building and a sub-basement warehouse area located on the east side of the building. The main basement reportedly extends eight feet below the surface, and the sub-basement reportedly extends an additional ten feet below the main basement. Monitoring well MW4 is located approximately 100 feet west of the Conval Antique Mall. PID readings obtained from soil samples from MW4 indicate that there is little adsorbed phase hydrocarbon contamination in soils above the water table, which is located at approximately 25 feet below the surface.

A marshy area is present in the pasture approximately 300 feet west of the on-site building. No petroleum odors or sheens on the marsh were observed during a visual inspection on

29 July 1992. The marshy area is upgradient from, and at approximately the same elevation as, the former UST locations. It appears that this area is located on a perched aquifer above the surficial aquifer that underlies the former UST area, and thus it is unlikely that the marsh area will be impacted by the observed hydrocarbon contamination at the site.

The Connecticut River, approximately 1200 feet to the east of the site, is the ultimate receptor of any residual petroleum contamination. It is likely that dissolved hydrocarbon compounds will have been diluted to below detectable levels by the time that they reach the river.

6.0 CONCLUSIONS

On the basis of the results obtained from the site subsurface investigation, Griffin has reached the following conclusions:

1. A release or releases of gasoline have occurred in the vicinity of the former gasoline underground storage tanks on the Estelle Blake estate in Ely, Vermont. No other potential sources are known to exist upgradient of the contaminated area, and contamination in unsaturated soils was highest in the former tank pit.
2. The absence of MTBE and the low levels of benzene relative to other BTEX compounds indicate that the nature of the contaminant was gasoline manufactured prior to approximately 1980.
3. It is likely that the observed leaks in the removed tanks, and possibly the associated piping, was responsible for the release or releases at the site. Whatever the actual source was, it was removed when the tanks were removed from the site. The amount and duration of the release are unknown.
4. Adsorbed phase gasoline contamination remains in unsaturated soils in and surrounding the former UST locations. PID readings indicate that the area of adsorbed soil contamination includes MW1 and MW2, but does not extend to MW3 or MW4.
5. Dissolved phase gasoline contamination remains in groundwater in the surficial aquifer below and downgradient of the former UST locations. The northern limit of groundwater contamination is well established; only a trace level of contamination was detected in monitoring well MW3. The southern and eastern limits of groundwater contamination, however, have not yet been established.
6. Overall BTEX levels were lower in monitoring well MW2, located in the former tank pit, than in monitoring wells MW1 and MW4. This suggests that the USTs were not significantly leaking when they were removed from the site, that the contamination in the soils and groundwater has existed for several years, and that much of the groundwater contamination has apparently migrated from the immediate vicinity of the former UST locations.
7. Materials comprising the surficial aquifer in the vicinity of the site are predominantly medium-fine and coarse-fine sands. Groundwater in the surficial aquifer on the site is present at approximately 22 feet below the surface, and flows east-southeast toward the Connecticut River at a gradient of 5.6%.
8. The residual contamination in soils and groundwater at the site does not appear to pose a significant threat to public health and safety. Most of the residences and businesses in the area obtain water from a spring located upgradient of the site. The

on-site drinking water supply well is 700 feet deep, and is located approximately 700 feet west of the on-site building in the upgradient direction from the former UST locations. The nearest downgradient drinking water well is a bedrock well located approximately 500 feet from the former UST locations. No hydrocarbon vapors were detected during a PID screening of the on-site building basements. PID readings from the downgradient well (MW4) indicate that it is unlikely that hydrocarbon vapors will impact the basement of the nearest downgradient building, the Conval Antique Mall. It is possible, however, that negative pressures generated by building furnaces may induce vapor migration into basements during the heating season.

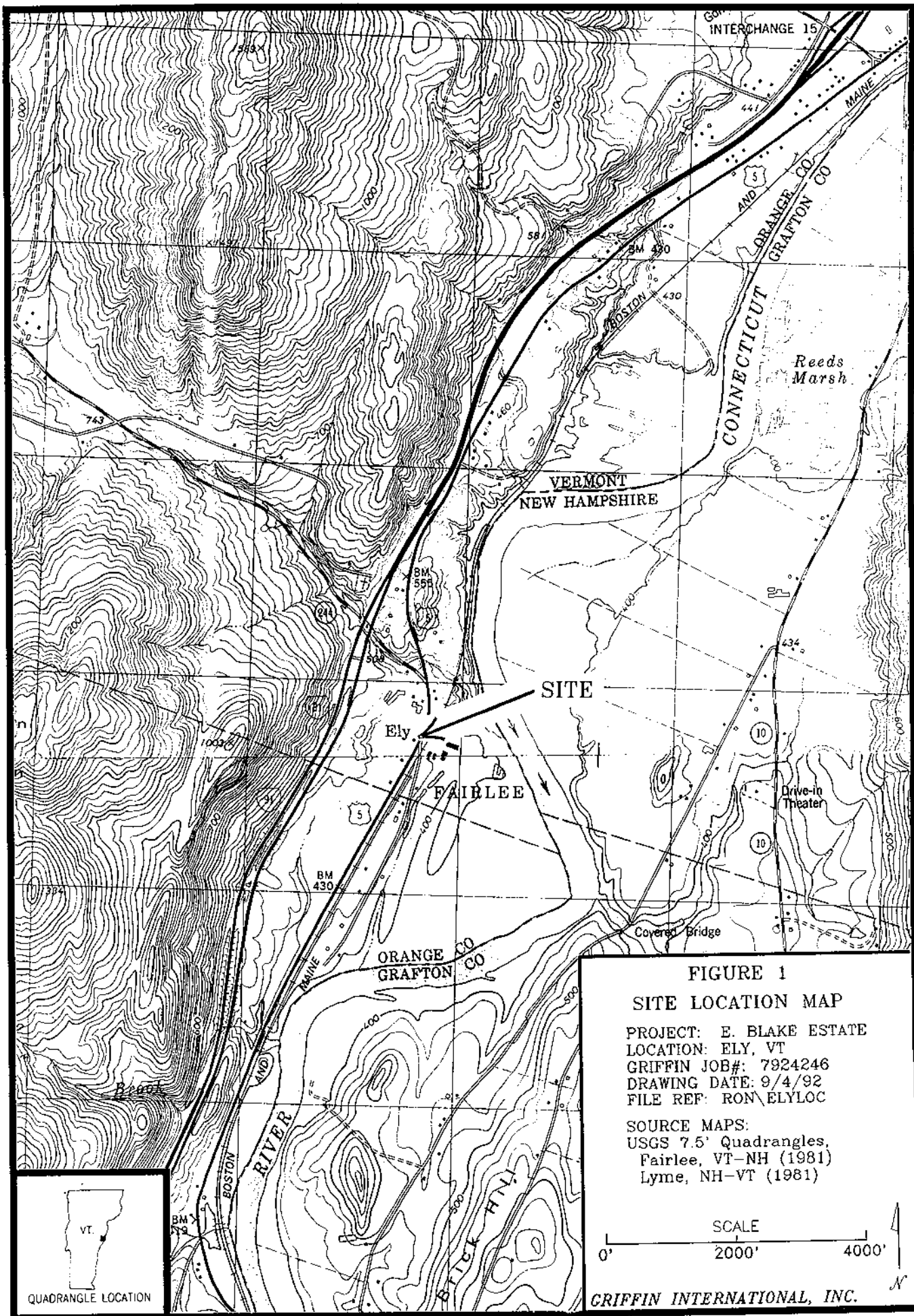
7.0 RECOMMENDATIONS

On the basis of the conclusions reached during this investigation, Griffin makes the following recommendations:

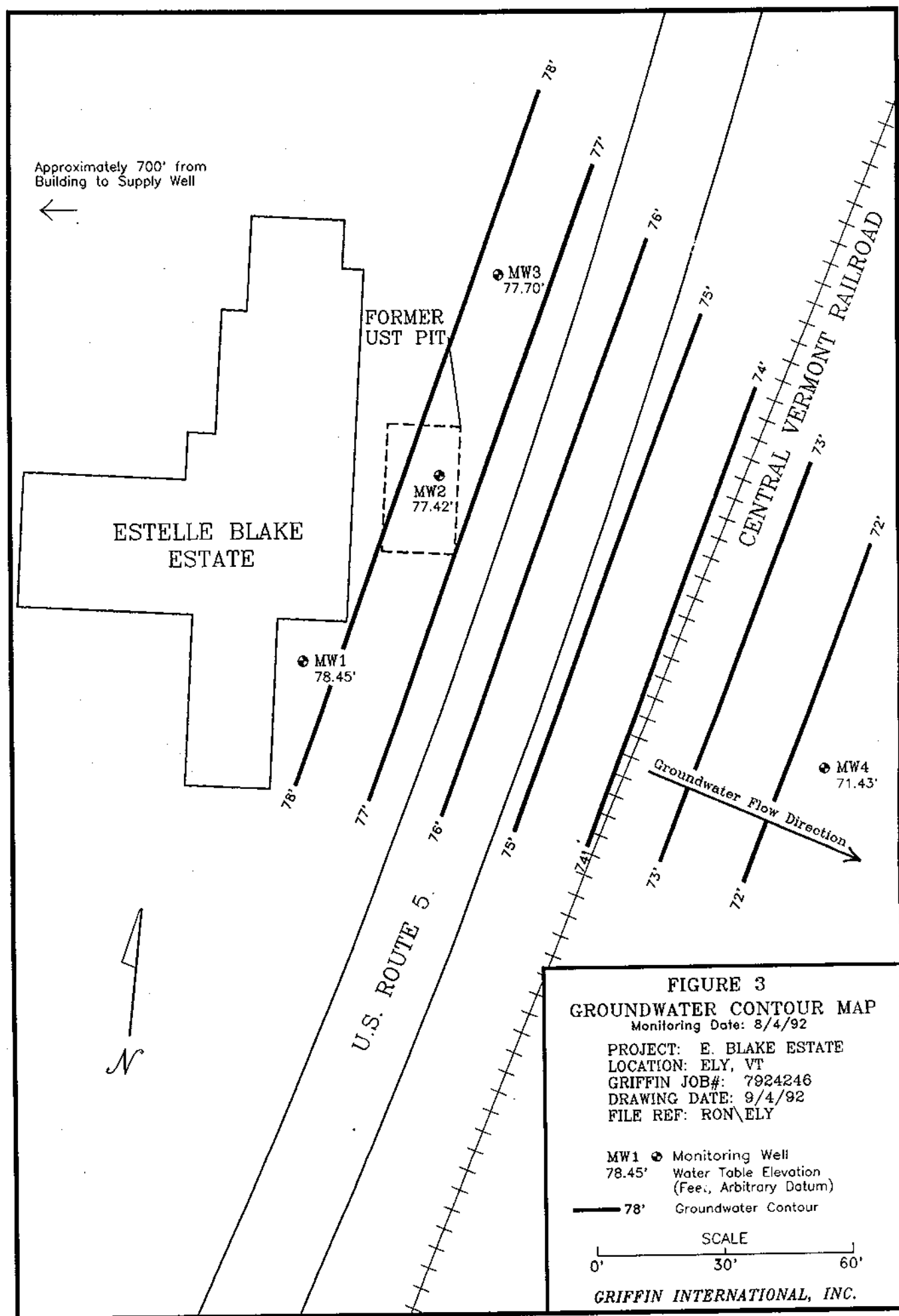
1. To monitor and document groundwater quality conditions at this site, groundwater samples should be collected from all of the presently installed monitoring wells and from the Daley bedrock supply well in October 1992. Samples should be analyzed according to EPA Method 8020.
2. To confirm that no hydrocarbon vapors are impacting nearby building basements, the Conval Antique Mall basements should be screened with a PID and the on-site building basements should be screened again, during the October 1992 water sampling.
3. Results obtained from the next round of groundwater sampling and PID screening will be used to determine whether installation of additional monitoring wells or active remediation is necessary. Since the residual petroleum contamination apparently has existed for several years, the absence of any impact to sensitive receptors may allow a long-term monitoring program instead of active remediation.

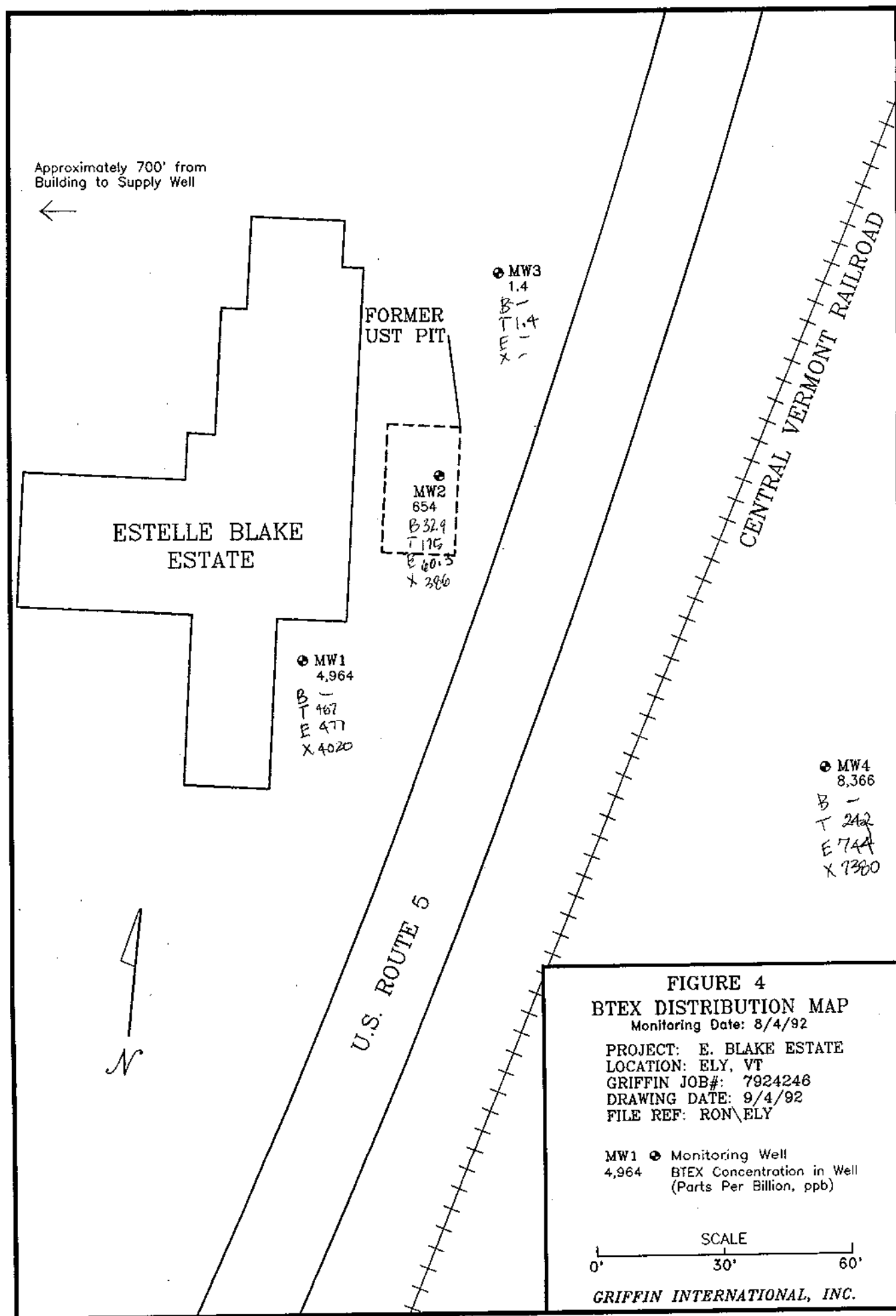
APPENDIX A

FIGURES



APPENDIX C
WATER LEVEL DATA



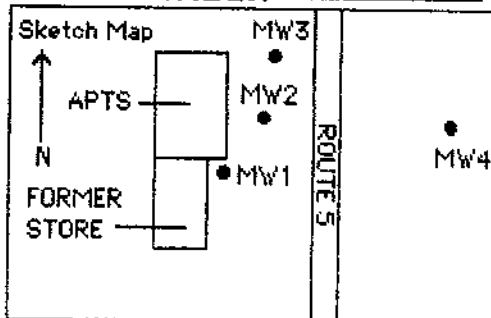


APPENDIX B

WELL LOGS

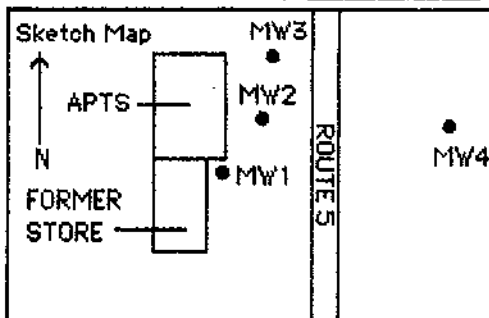
PROJECT ESTELLE BLAKE ESTATE
 LOCATION ELY, VERMONT
 DATE DRILLED 29 JULY 1992 TOTAL DEPTH OF HOLE 29.5'
 DIAMETER 4.25"
 SCREEN DIA. 2" LENGTH 10' SLOT SIZE .010"
 CASING DIA. 2" LENGTH 19.5' TYPE PVC
 DRILLING CO. TRI STATE DRILLING DRILLING METHOD HOLLOW-STEM AUGER
 DRILLER ED WESTOVER LOG BY RON MILLER

WELL NUMBER MW-1



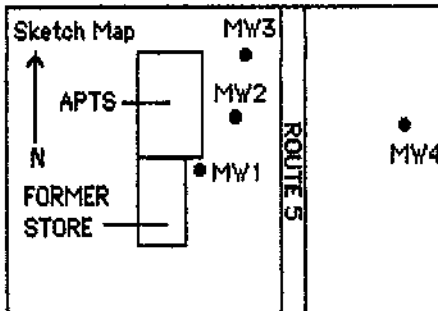
DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" & PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX	PID: MicroTIP HL2000		0
2		WELL CAP	S1: 2' Auger Sample	Brown fine SAND, dry, no odor	2
4		CONCRETE	5.6 ppm		4
6		NATIVE BACKFILL	S2: 1-1-1-1; 1.7ppm	Brown med-fine SAND, moist, no odor	6
8					8
10		WELL RISER	S3: 4-5-7-6; 8.0ppm	Brown stratified med-fine SAND, moist, no odor	10
12					12
14					14
16		BENTONITE	S4: 3-4-5-7; 1873 ppm	Brown coarse-fine SAND, moist, slight odor; Dk Brown fine SAND and SILT layer 16.6-16.7'	16
18					18
20			S5: 1-2-3-6; 2185 ppm	Brown coarse-fine SAND, moist; odor; Dk Brown fine SAND and SILT layer, wet, 21.3-21.9'	20
22		GRAVEL PACK			22
24		WELL SCREEN	S6: 1-1-2-2; 1842 ppm	Brown coarse-fine SAND, wet, odor	24
26					26
28		BOTTOM CAP			28
30				BOTTOM OF EXPLORATION AT 30'	30
32					32
34					34
36					36
38					38
40					40
42					42
44					44
46					46
48					48
50					50
52					52

Griffin International
 REF: PAINT 69

PROJECT ESTELLE BLAKE ESTATELOCATION ELY, VERMONTDATE DRILLED 29 JULY 1992 TOTAL DEPTH OF HOLE 28'DIAMETER 4.25"SCREEN DIA. 2" LENGTH 10' SLOT SIZE .010"CASING DIA. 2" LENGTH 18' TYPE PVCDRILLING CO. TRI STATE DRILLING DRILLING METHOD HOLLOW-STEM AUGERDRILLER ED WESTOVER LOG BY RON MILLERWELL NUMBER MW-2

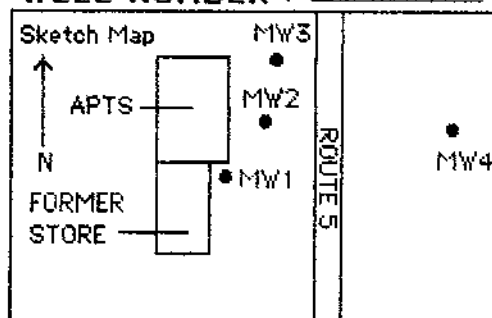
DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" & PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX	PID: MicroTIP HL2000		0
2		WELL CAP	S1: 2' Auger Sample	Dark Brown fine SAND and SILT, moist, odor	2
4		CONCRETE	2204 ppm		4
6		NATIVE BACKFILL	S2: 1-1-1-1; 1450 ppm	Dark Brown fine SAND and SILT, moist, odor	6
8					8
10		WELL RISER	S3: 2-4-4-5; >2500 ppm	Brown med-fine SAND, moist, odor	10
12					12
14		BENTONITE	S4: 4-5-8-8; >2500 ppm	Brown med-fine SAND, moist, odor	14
16				Tan coarse-fine SAND, moist, odor	16
18					18
20		GRAVEL PACK	S5: 3-3-4-5; 263 ppm	Tan coarse-fine SAND, moist, odor	20
22		WELL SCREEN			22
24			S6: 1-1-2-3; 1170 ppm	Brown med-fine SAND, wet, slight odor	24
26					26
28		BOTTOM CAP			28
30				BOTTOM OF EXPLORATION AT 28'	30
32					32
34					34
36					36
38					38
40					40
42					42
44					44
46					46
48					48
50					50
52					52

Griffin International
REF: PAINT 69

PROJECT ESTELLE BLAKE ESTATELOCATION ELY, VERMONTDATE DRILLED 29 JULY 1992 TOTAL DEPTH OF HOLE 28.8'DIAMETER 4.25"SCREEN DIA. 2" LENGTH 10' SLOT SIZE .010"CASING DIA. 2" LENGTH 18.8' TYPE PVCDRILLING CO. TRI STATE DRILLING DRILLING METHOD HOLLOW-STEM AUGERDRILLER ED WESTOVER LOG BY RON MILLERWELL NUMBER MW-3

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" & PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX	PID: MicroTIP HL2000		0
2		WELL CAP	S1: 2' Auger Sample	Brown fine SAND and SILT, dry, no odor	2
4		CONCRETE	1.1 ppm		4
6		NATIVE BACKFILL	S2: 1-2-3-4; 0.0 ppm	Brown fine SAND, dry, no odor	6
8					8
10		WELL RISER	S3: 2-2-4-3; 0.0 ppm	Tan med-fine SAND, moist, no odor; Brown SILT and SAND layer 11.7-11.8'	10
12					12
14		BENTONITE			14
16			S4: 5-8-6-5; 0.0 ppm	Tan med-fine SAND, moist, no odor; Brown SILT and fine SAND layer 17-17.2'	16
18					18
20		GRAVEL PACK	S5: 2-3-4-7; 0.0 ppm	Tan med-fine SAND, moist, no odor	20
22		WELL SCREEN			22
24					24
26			S6: 5-6-5-3; 0.0 ppm	Brown SILT, wet, no odor, 6" recovery	26
28		BOTTOM CAP			28
30				BOTTOM OF EXPLORATION AT 28.8'	30
32					32
34					34
36					36
38					38
40					40
42					42
44					44
46					46
48					48
50					50
52					52

Griffin International
REF: PAINT 69

PROJECT ESTELLE BLAKE ESTATELOCATION ELY, VERMONTDATE DRILLED 29 JULY 1992 TOTAL DEPTH OF HOLE 28.8'DIAMETER 4.25"SCREEN DIA. 2" LENGTH 10' SLOT SIZE .010"CASING DIA. 2" LENGTH 19.5' TYPE PVCDRILLING CO. TRISTATE DRILLING DRILLING METHOD HOLLOW-STEM AUGERDRILLER ED WESTOVER LOG BY RON MILLERWELL NUMBER MW-4

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" & PID READINGS	DESCRIPTION / SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX	PID: MicroTIP HL2000		0
2		WELL CAP	S1: 2' Auger Sample	Brown SAND and GRAVEL; dry, no odor	2
4		CONCRETE	0.0 ppm		4
6		NATIVE BACKFILL	S2: 4-5-7-9; 0.0ppm	Brown SILT and fine SAND, moist, no odor	6
8				Tan coarse-fine SAND, moist, no odor	8
10		WELL RISER	S3: 2-4-5-8; 0.6 ppm	Brown coarse-fine SAND, moist, no odor	10
12				Brown SILT and fine SAND, moist, no odor	12
14		BENTONITE		Tan coarse-fine SAND, moist, no odor	14
16			S4: 3-5-6-7; 0.8 ppm	Tan coarse-fine SAND, moist, no odor	16
18					18
20		GRAVEL PACK	S5: 2-3-4-5; 0.9 ppm	Tan coarse-fine SAND, moist, no odor	20
22		WELL SCREEN		Brown med-fine SAND, moist, no odor	22
24				Brown SILT and fine SAND, wet, no odor	24
26		BOTTOM CAP	S6: 1-1-1-1; 18.4 ppm	Brown coarse-fine SAND, wet, slight odor	26
28					28
30				BOTTOM OF EXPLORATION AT 28.5'	30
32					32
34					34
36					36
38					38
40					40
42					42
44					44
46					46
48					48
50					50
52					52

Griffin International
REF: PAINT 69

APPENDIX C
WATER LEVEL DATA

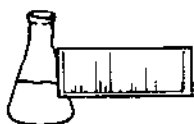
LIQUID LEVEL MONITORING DATA

PROJECT #: 7924246
PROJECT NAME: Estelle Blake Estate
LOCATION: Ely

DATE: 8/4
SAMPLER: B5
INSTRUMENTATION USED:

[illegible]**COMMENTS:**

APPENDIX D
LABORATORY REPORT FORMS



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Estelle Blake Estate
REPORT DATE: August 18, 1992
DATE SAMPLED: August 4, 1992
DATE RECEIVED: August 5, 1992
ANALYSIS DATE: August 17, 1992

PROJECT CODE: GIEB1865
REF.#: 34,003
STATION: MW 1
TIME SAMPLED: 13:55
SAMPLER: Becca Schuyler

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	100	ND ²
Chlorobenzene	200	ND
1,2-Dichlorobenzene	200	ND
1,3-Dichlorobenzene	200	ND
1,4-Dichlorobenzene	200	ND
Ethylbenzene	100	477.
Toluene	100	467.
Xylenes	100	4,020.
MTBE	500	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 10

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 1% dilution.
2 None detected

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Reviewed by Sergio Gonzalez



Laboratory Services

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FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Estelle Blake Estate
REPORT DATE: August 18, 1992
DATE SAMPLED: August 4, 1992
DATE RECEIVED: August 5, 1992
ANALYSIS DATE: August 17, 1992

PROJECT CODE: GIEB1865
REF.#: 33,999
STATION: MW 2
TIME SAMPLED: 14:20
SAMPLER: Becca Schuyler

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	5	32.9
Chlorobenzene	10	ND ²
1,2-Dichlorobenzene	10	ND
1,3-Dichlorobenzene	10	ND
1,4-Dichlorobenzene	10	ND
Ethylbenzene	5	60.3
Toluene	5	175.
Xylenes	5	386.
MTBE	25	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: >25

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 20% dilution.
2 None detected

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Reviewed by Susan Thibault



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Estelle Blake Estate
REPORT DATE: August 18, 1992
DATE SAMPLED: August 4, 1992
DATE RECEIVED: August 5, 1992
ANALYSIS DATE: August 17, 1992

PROJECT CODE: GIEB1865
REF.#: 34,000
STATION: Duplicate
TIME SAMPLED: 14:20
SAMPLER: Becca Schuyler

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	5	11.5
Chlorobenzene	10	ND ²
1,2-Dichlorobenzene	10	ND
1,3-Dichlorobenzene	10	ND
1,4-Dichlorobenzene	10	ND
Ethylbenzene	5	82.1
Toluene	5	210.
Xylenes	5	495.
MTBE	25	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: >25

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 20% dilution.
2 None detected

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Reviewed by Susan Finkel



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Laboratory Services

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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Estelle Blake Estate
REPORT DATE: August 18, 1992
DATE SAMPLED: August 4, 1992
DATE RECEIVED: August 5, 1992
ANALYSIS DATE: August 16, 1992

PROJECT CODE: GIEB1865
REF.#: 34,001
STATION: MW 3
TIME SAMPLED: 13:10
SAMPLER: Becca Schuyler

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,4-Dichlorobenzene	2	ND
Ethylbenzene	1	ND
Toluene	1	1.4
Xylenes	1	ND
MTBE	5	ND

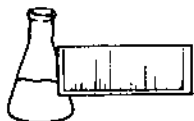
NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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Reviewed by Susan Dudgeon



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Estelle Blake Estate
REPORT DATE: August 18, 1992
DATE SAMPLED: August 4, 1992
DATE RECEIVED: August 5, 1992
ANALYSIS DATE: August 17, 1992
REVISED REPORT: August 21, 1992

PROJECT CODE: GIEB1865
REF.#: 34,004
STATION: MW 4
TIME SAMPLED: 13:30
SAMPLER: Becca Schuyler

<u>Parameter</u>	<u>Detection Limit (ug/L)¹</u>	<u>Concentration (ug/L)</u>
Benzene	100	ND ²
Chlorobenzene	200	ND
1,2-Dichlorobenzene	200	ND
1,3-Dichlorobenzene	200	ND
1,4-Dichlorobenzene	200	ND
Ethylbenzene	100	744.
Toluene	100	242.
Xylenes	100	7,380.
MTBE	500	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 5

NOTES:

- 1 Detection limit raised due to high levels of contaminants. Sample run at 1% dilution.
2 None detected

Reviewed by Susan Drake



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
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FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Ely/Capchr
REPORT DATE: August 21, 1992
DATE SAMPLED: August 4, 1992
DATE RECEIVED: August 5, 1992
ANALYSIS DATE: August 20, 1992

PROJECT CODE: GIEL1864
REF.#: 33,998
STATION: Trip Blank
TIME SAMPLED: 7:30
SAMPLER: Becca Schuyler

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,4-Dichlorobenzene	2	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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Reviewed by

Becca Schuyler



ENDYNE, INC.

Laboratory Services

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Williston, Vermont 05495
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FAX 879-7103

LABORATORY REPORT

EPA METHOD 602 -- PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Estelle Blake Estate
REPORT DATE: August 18, 1992
DATE SAMPLED: August 4, 1992
DATE RECEIVED: August 5, 1992
ANALYSIS DATE: August 15, 1992

PROJECT CODE: GIEB1865
REF.#: 34,002
STATION: Equip Blank
TIME SAMPLED: 12:50
SAMPLER: Becca Schuyler

<u>Parameter</u>	<u>Detection Limit (ug/L)</u>	<u>Concentration (ug/L)</u>
Benzene	1	ND ¹
Chlorobenzene	2	ND
1,2-Dichlorobenzene	2	ND
1,3-Dichlorobenzene	2	ND
1,4-Dichlorobenzene	2	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	5	ND

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:

1 None detected

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Reviewed by *Sean G. White*